UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,559	12/18/2001	Kalle Asikainen	460-010760-US(PAR)	2670

2512 7590 12/08/2006

PERMAN & GREEN
425 POST ROAD
FAIRFIELD, CT 06824

EXAMINER	
JAMAL, ALEXANDER	

ART UNIT	PAPER NUMBER
2614	

DATE MAILED: 12/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/023,559	ASIKAINEN ET AL.	
	Examiner	Art Unit	
	Alexander Jamal	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10-18-2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Based upon the submitted amendment, the examiner notes that claims 1,2,7,9,19 have been amended.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1-6,9-11,13-17,19-21** are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (specification pages 1,2), and further in view of Heck (4653117).

As per **claim 1,** applicant's admitted prior art discloses a direct conversion receiver for carrier modulated signals. The receiver performing the method of mixing (specification pages 1,2) (page 1 lines 25-30) local oscillator signals to generate baseband signals which are then filtered via capacitors (page 2 lines 30-35) to filter out the DC component. It further discloses that digital modulation is used and that modulation may comprise ASK,FSK or PSK (page 1 lines 5-15). ASK, FSK, and PSK are known forms of modulation that produce known frequency nulls at multiples of the chip rate (specification page 1 lines 10-25). However, applicant' admitted prior art does not disclose offsetting the local oscillator frequency by an offset close to the difference

between the carrier and a null frequency in order to center the notch at the zero frequency.

Heck teaches a direct conversion receiver (ABSTRACT). Heck teaches an embodiment of the receiver where the input signal is down-converted by using the carrier frequency plus a small offset such that any beat (DC offset) that occurs will be below the lowest modulation frequency (in a spectral null) (Col 6 line 64 to Col 7 line 30). It would have been obvious to one of ordinary skill in the art at the time of this application that the prior art receiver disclosed by applicant could offset the local oscillator frequency for the purpose of eliminating the effect of DC offset on the information carrying signal.

As per **claim 2,** claim rejected for same reasons as claim 1 rejection. Applicant's admitted prior art (specification page 2) discloses that the received signal is split into in-phase and quadrature signals that are processed with a signal from an oscillator via mixing means (a first and second mixer, one for the In-phase, and one for the quadrature) (page 1 line 25 to page 2 line 10). Each mixed signal is then filtered with the notch filters (a first and second filter) (page 2 lines 30-37), and each signal is then demodulated and then DC filtered via capacitors. The oscillator in Heck is offset by any frequency which will put the zero frequency below the lowest modulation frequency (in a spectral null). Examiner notes that the signaling rate or any multiple of it may be used to shift the spectral null to the receiver null.

As per **claims 9,11,** claims are rejected as a method performed by the device of the claim 2 rejection.

As per **claims 13,19** claims are rejected for the same reasons as the claim 1,2 rejections.

As per **claims 3,5,10,14,15,16,20,21,** applicant's specification discloses the use of a third and fourth low pass filter, one for the In-phase signal and one for the quadrature, and further discloses that the notch filters at the output of the mixers may comprise capacitors (high pass filters) (page 2 lines 1-10,30-37).

As per **claims 4,6,17,** claims are rejected for same reasons as claim 2.

4. **Claims 7,8,12,18 are** rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (specification pages 1,2) and Heck (4653117), and further in view of Rapeli (6510313).

As per **claim 7,** applicant's admitted prior art in view of Heck discloses claim 7 as per the rejections of claims 1-6 above. However they do not disclose that the direct conversion receiver is used in a GPS system.

Rapeli discloses that a CDMA direct conversion receiver system can be implemented as a GPS system. It would have been obvious to one of ordinary skill in the art at the time of this application that the direct conversion receiver may be used as a GPS receiver for the reason that the that the direct conversion receiver can successfully receive the carrier modulated CDMA signal used in the GPS system.

As per **claims 12,18,** claims are rejected for the same reasons as the claim 7,3,5,10 rejections.

As per **claim 8,** claim rejected for same reasons as claims 3,5,10.

Response to Arguments

1. Applicant's arguments with respect to claims 1-21 have been considered but are not persuasive.

As per applicant's comment that the term 'null' does not appear in the Heck reference, examiner reads any part of the spectrum which does not contain signaling from the information signal as a spectral null for that signal. Examiner further notes the aforementioned Gehring reference further describes Heck's teachings (Col 2 lines 34-50) and the Gehring reference discloses spectral nulls in Figs. 2A-2D (the frequency portions in between the carriers and sidebands).

As per applicant's comments that the 'spectral null' is specifically referenced and described in the specification. Examiner agrees with applicant's point, but also notes that applicant discloses the modulating protocols as admitted prior art in page 1 of the specification. The known modulation protocols inherently comprise spectral nulls at multiples of the chip due to natural phenomenon of modulating a waveform. Examiner notes that the claims are rejected based on applicant's admitted prior art in view of the teachings of Heck. Applicant notes that the 'chip rate' was not present in Heck and examiner agrees, but the examiner notes that the reason it is not present is because

digitally modulated wireless systems were not as prevalent in 1987. Examiner maintains that one skilled in the art at the time of This application would realize that digital modulation protocols produce known nulls according to the chip rate. Further, examiner maintains that one skilled in the art would look to the teaching of Heck to offset an oscillator frequency in order to move spectral content of the data signal away from any possible DC offsets. In the case of applicant's admitted prior art system, the DC offsets are known to caused by modulation using known protocols at known chiprates.

As per applicant's arguments that Heck's disclosed offset is not close in value to the chip-rate disclosed in applicant's admitted prior art system, examiner contends that one skilled in the art would know the chip-rate and spectral characteristics of known digital modulation protocols and would know that the spectral nulls occur at the chip rate and the examiner contends that one skilled in the art would realize that the chiprate could be used to set the offset amount in order to remove any spectrum with valid data away from a possible DC offset.

As per applicant's comments that Heck does not disclose choosing an offset with respect to a null, examiner disagrees. Heck functions to move the spectrum containing data away from DC offsets. This is further supported by Gehring (4944025) who describes Heck's system (GEHRING: Col 2 lines 30-55). The areas between line spectra are spectral nulls. Again, examiner is using applicant's admitted prior art system with the known chiprate and spectral nulls in view of the teachings of Heck to reject applicant's claims.

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Jamal whose telephone number is 571-272-7498. The examiner can normally be reached on M-F 9AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis A Kuntz can be reached on 571-272-7499. The fax phone numbers for the organization where this application or proceeding is assigned are **571-273-8300** for regular communications and **571-273-8300** for After Final communications.

CURTIS KUNTZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

AJ
November 29, 2006